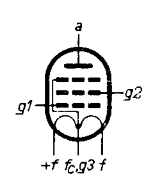
"Miniwatt" DL 92

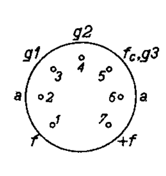
OUTPUT PENTODE for battery receivers
PENTHODE DE SORTIE pour des appareils batterie
ENDPENTODE für Batteriegeräte

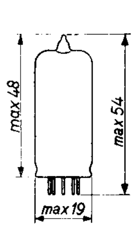
Heating:	direct by battery current, rectified A.C. or D.C.; series or parallel supply
Chauffage:	direct par courant batterie, C.A.redressé ou C.C.; alimentation en série ou en parallèle
Heizung:	direkt durch Batteriestrom, gleichgerichteten Wechselstrom oder Gleichstrom; Serien-oder Parallelspeisung

Parallel supply: Alimentation en parallèle: Parallelspeisung:	Vf =	1,4 V	2,8 V
	If =	100 mA	50 mA
	Pins Broches Stifte	5-(1+7)	1-7
Series supply: Alimentation en série: Serienspeisung:	Vf =	1,35 V	2,7 V
	Pins Broches Stifte	5-(1+7)	1-7

Dimensions in mm
Dimensions en mm
Abmessungen in mm







Base, culot, Sockel: Miniature

Capacitances Capacités Kapazitäten		
Cg1	=	4,35 pF
Ca	=	6,0 pF
Cag1	<	0,4 pF

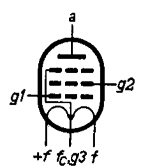
PHILIPS DL 92

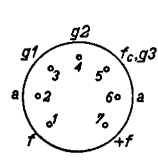
OUTPUT PENTODE for battery receivers
PENTHODE DE SORTIE pour des appareils batterie
ENDPENTODE für Batteriegeräte

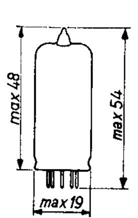
Heating: direct by D.C.; series or parallel supply
Chauffage: direct par C.C.; alimentation en série ou en parallèle
Heizung: direkt durch Gleichstrom; Serien- oder Parallelspeisung

Parallel supply: Alimentation en parallèle: Parallelspeisung:	Vf =	1,4 V	2,8 V
	If =	100 mA	50 mA
	Pins Broches Stifte	5-(1+7)	1-7
Series supply: Alimentation en série: Serienspeisung:	Vf =	1,3 V	2,6 V
	Pins Broches Stifte	5-(1+7)	1-7

Dimensions in mm
Dimensions en mm
Abmessungen in mm







Base, culot, Sockel: Miniature

Capacitances
Capacités
Kapazitäten

C_{g1} = 4,35 pF
C_a = 6,0 pF
C_{ag1} < 0,4 pF

DL 92 "Miniwatt"

Operating characteristics class A
Caractéristiques d'utilisation classe A
Betriebsdaten Klasse A

A. Vf=1,4V; If=100mA; pins, broches, Stifte 5-(1+7)

Va	=	45	67,5	90	V
Vg2	=	45	67,5	67,5	V
Vg1	=	-4,5	-7	-7	V
Ia	=	3,8	7,2	7,4	mA
Ig2	=	0,8	1,5	1,4	mA
S	=	1,25	1,55	1,57	mA/V
µg2g1	=	5	5	5	
Ri	=	0,1	0,1	0,1	MΩ
Ra	=	8	5	8	kΩ
Wo	=	65	180	270	mW
Vi	=	3,5	5,5	5,5	V_{eff}
d_{tot}	=	12	10	12	%
V_i (W_o=50mW)	=	2,8	2,5	1,95	V_{eff}

B. Vf= 2,8 V; If= 50 mA; pins, broches, Stifte 1-7

Va	=	45	67,5	90	V
Vg2	=	45	67,5	67,5	V
Vg1	=	-4,5	-7	-7	V
Ia	=	3,0	6,0	6,1	mA
Ig2	=	0,7	1,2	1,1	mA
S	=	1,1	1,4	1,42	mA/V
µg2g1	=	5	5	5	
Ri	=	0,1	0,1	0,1	MΩ
Ra	=	8	5	8	kΩ
Wo	=	50	160	235	mW
Vi	=	3,5	5,5	5,5	V_{eff}
d_{tot}	=	12,5	12	13	%
V_i (W_o=50mW)	=	3,5	2,5	1,95	Veff

Operating characteristics class A
Caractéristiques d'utilisation classe A
Betriebsdaten Klasse A

A. V_f = 1,4 V; I_f = 100 mA; pins,broches,Stifte 5-(1+7)

V_a	=	45	41	67,5	V
V_{g2}	=	45	41	67,5	V
V_{g1}	=	-4,5	-3,5	-7	V
I_a	=	3,8	4,0	7,2	mA
I_{g2}	=	0,8	0,8	1,5	mA
S	=	1,25	1,3	1,55	mA/V
μ_{g2g1}	=	5	4,5	5	
R_i	=	100	90	100	kΩ
R_a	=	8	7	5	kΩ
W_o	=	65	45	180	mW
V_i	=	3,5	2,9	5,5	Veff
d_{tot}	=	12	13	10	%
V_i(W_o=50 mW)	=	2,8	-	2,5	Veff

V_a	=	61	90	84	V
V_{g2}	=	61	67,5	[1])	V
V_{g1}	=	-6	-7	-6,5	V
I_a	=	6,6	7,4	8,0	mA
I_{g2}	=	1,4	1,4	1,7	mA
S	=	1,5	1,57	1,55	mA/V
μ_{g2g1}	=	4,5	5	4,5	
R_i	=	100	100	100	kΩ
R_a	=	7	8	7	kΩ
W_o	=	125	270	190	mW
V_i	=	4,5	5,1	5,1	Veff
d_{tot}	=	14	12	13	%
V_i	=	2,0	1,95	1,9	Veff

[1]) R_{g2} = 10kΩ, decoupled with 0,47 μF (V_{bg2} = 84 V)
R_{g2} = 10kΩ, découplé par 0,47 μF (V_{bg2} = 84 V)
R_{g2} = 10kΩ, entkoppelt durch 0,47 μF (V_{bg2} = 84 V)

Operating characteristics class B
Caractéristiques d'utilisation classe B
Betriebsdaten Klasse B

A. V_f=1,4V; I_f=100mA; pins, broches, Stifte 5-(1+7)
(Vb_a = 90 V; Vb_{g2} = 67,5 V)

Va	=	80		V
Vg2	=	57,5		V
Vg1	=	-9,9		V
Raa	=	16		kΩ
Vi	=	0	7,3	V_{eff}
Ia	=	2x1,5	2x4,4	mA
Ig2	=	2x0,3	2x1,35	mA
Wo	=	0	325	mW
d_{tot}	=	-	5	%

B. V_f= 2,8 V; I_f = 50 mA; pins, broches, Stifte 1-7
(Vb_a = 90 V; Vb_{g2} = 67,5 V)

Va	=	81		V
Vg2	=	58,5		V
Vg1	=	-9,2		V
Raa	=	18		kΩ
Vi	=	0	7,0	V_{eff}
Ia	=	2x1,5	2x4,2	mA
Ig2	=	2x0,3	2x1,25	mA
Wo	=	0	315	mW
d_{tot}	=		4,7	%

Limiting values
Caractéristiques limites
Grenzdaten

Va	= max.	90	V
Wa	= max.	0,7	W
Vg2	= max.	67,5	V
W_{g2}	= max.	0,15	W
V_{g1} (I_{g1}=+0,3µA)	= max.	+0,2	V
I_k	= max.	11	mA
R_{g1}	= max.	2	MΩ

B. V_f = 2,8 V; I_f=50 mA; pins, broches, Stifte 1- 7

V_a	=	45	41	67,5	V
V_{g2}	=	45	41	67,5	V
V_{g1}	=	-4,5	-3,5	-7	V
I_a	=	3,0	3,2	6,0	mA
I_{g2}	=	0,7	0,7	1,2	mA
S	=	1,1	1,15	1,4	mA/V
μ_{g2g1}	=	5	45	5	
R_i	=	100	110	100	kΩ
R_a	=	8	7	5	kΩ
W_o	=	50	38	160	mW
V_i	=	3,5	2,8	5,5	V_{eff}
d_{tot}	=	12,5	13	12	%
V_i(W_o = 50 mW)	=	3,5	-	2,5	V_{eff}

V_a	=	61	90	84	V
V_{g2}	=	61	67,5	[1])	V
V_{g1}	=	-5,5	-7	-6	V
I_a	=	6,5	6,1	7,6	mA
I_{g2}	=	1,4	1,1	1,6	mA
S	=	1,45	1,42	1,5	mA/V
μ_{g2g1}	=	4,5	5	4,5	
R_i	=	100	100	105	kΩ
R_a	=	7	8	7	kΩ
W_o	=	120	235	180	mW
V_i	=	4,4	4,7	4,7	V_{eff}
d_{tot}	=	14	13	13	%
V_i(W_o = 50 mW)	=	2,0	1,95	1,9	V_{eff}

[1]) R_{g2} = 10 kΩ, decoupled with 0,47 μF (V_{bg2}= 84 V)
R_{g2} = 10 kΩ, découplé par 0,47 μF (V_{bg2}= 84 V)
R_{g2} = 10 kΩ, entkoppelt durch 0,47 μF (V_{bg2}= 84 V)

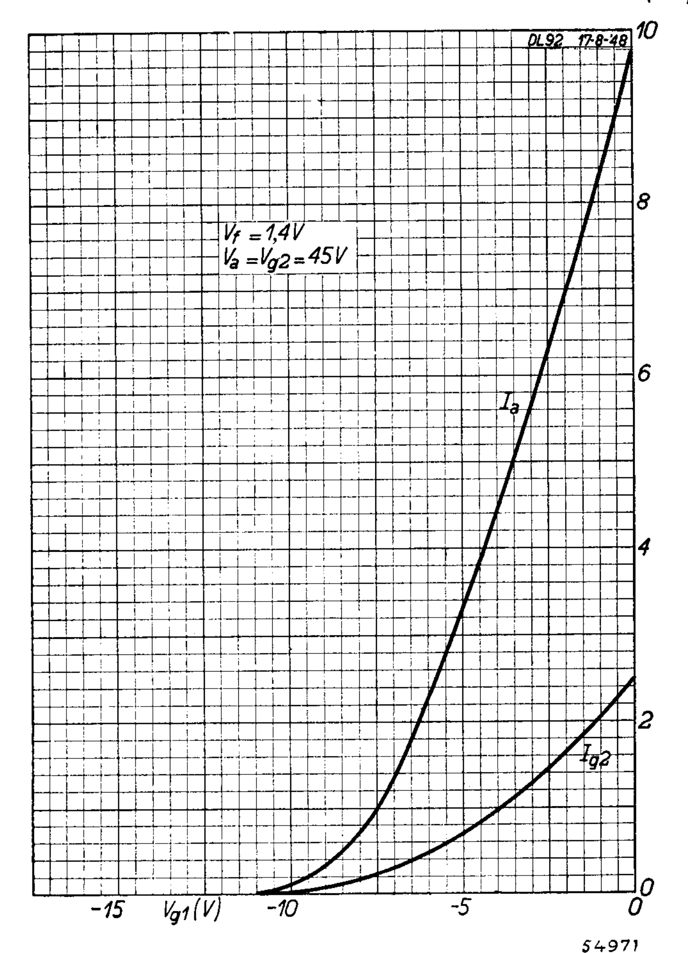
B. V_f = 2,8 V; I_f=50 mA; pins, broches, Stifte 1- 7

V_a	=	45	41	67,5	V
V_{g2}	=	45	41	67,5	V
V_{g1}	=	-4,5	-3,5	-7	V
I_a	=	3,0	3,2	6,0	mA
I_{g2}	=	0,7	0,7	1,2	mA
S	=	1,1	1,15	1,4	mA/V
$\mu g2g1$	=	5	45	5	
R_i	=	100	110	100	kΩ
R_a	=	8	7	5	kΩ
W_o	=	50	38	160	mW
V_i	=	3,5	2,8	5,5	V_{eff}
d_{tot}	=	12,5	13	12	%
$V_i(W_o$ = 50 mW)	=	3,5	-	2,5	V_{eff}

V_a	=	61	90	84	V
V_{g2}	=	61	67,5	[1])	V
V_{g1}	=	-5,5	-7	-6	V
I_a	=	6,5	6,1	7,6	mA
I_{g2}	=	1,4	1,1	1,6	mA
S	=	1,45	1,42	1,5	mA/V
$\mu g2g1$	=	4,5	5	4,5	
R_i	=	100	100	105	kΩ
R_a	=	7	8	7	kΩ
W_o	=	120	235	180	mW
V_i	=	4,4	4,7	4,7	V_{eff}
d_{tot}	=	14	13	13	%
$V_i(W_o$ = 50 mW)	=	2,0	1,95	1,9	V_{eff}

[1]) R_{g2} = 10 kΩ, decoupled with 0,47 µF (V_{bg2}= 84 V)
R_{g2} = 10 kΩ, découplé par 0,47 µF (V_{bg2}= 84 V)
R_{g2} = 10 kΩ, entkoppelt durch 0,47 µF (V_{bg2}= 84 V)

DL 92 "Miniwatt"



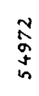
54971

Limiting values
Caractéristiques limites
Grenzdaten

V_a	= max.	90	V
W_a	= max.	0,7	W
V_{g2}	= max.	67,5	V
W_{g2}	= max.	0,15	W
V_{g1} (I_{g1} = +0,3 μA)	= max.	0	V
I_k	= max.	11	mA
R_{g1}	= max.	2	MΩ

Limiting values
Caractéristiques limites
Grenzdaten

V_{a_o}	= max.	90 V
V_a	= max.	90 V
W_a	= max.	0,7 W
V_{g2_o}	= max.	90 V
V_{g2}	= max.	67,5 V
W_{g2}	= max.	0,15 W
$V_{g1}(I_{g1} = +0,3\ \mu A)$	= max.	0 V
I_k	= max.	11 mA
R_{g1}	= max.	2 MΩ



I_a (mA)

V_a (V)

$V_f = 1,4V$
$V_{g2} = 45V$

$V_{g1} = 0V$

-2V

-4V

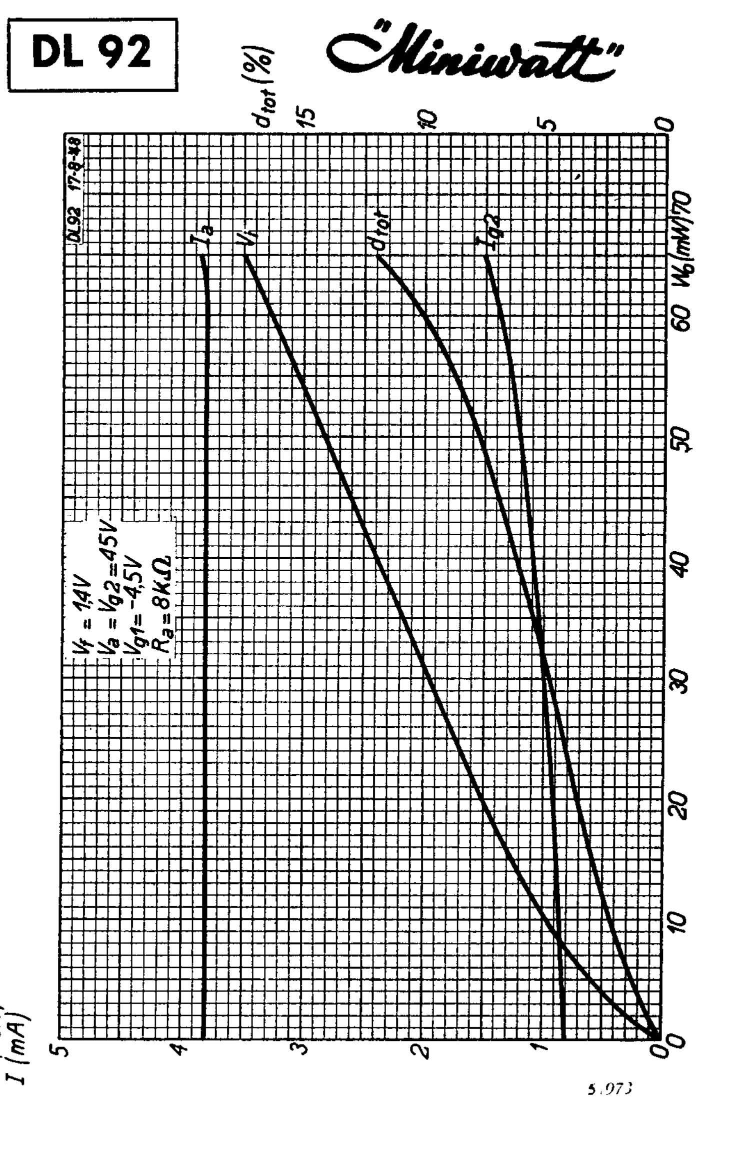
-6V

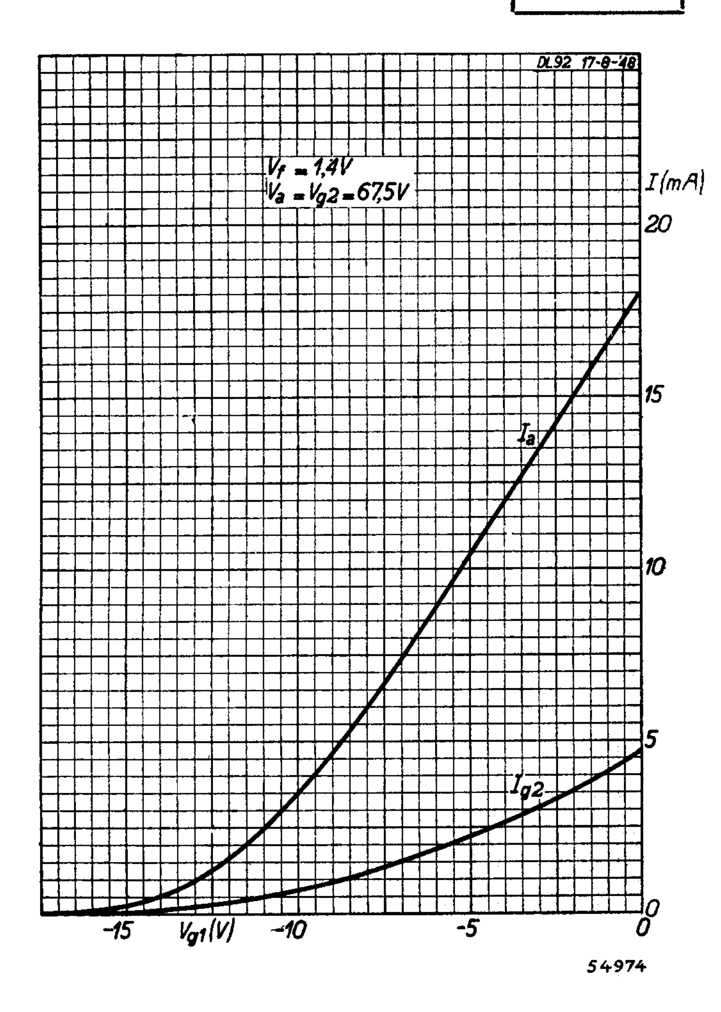
-8V

DL92 17-8-48

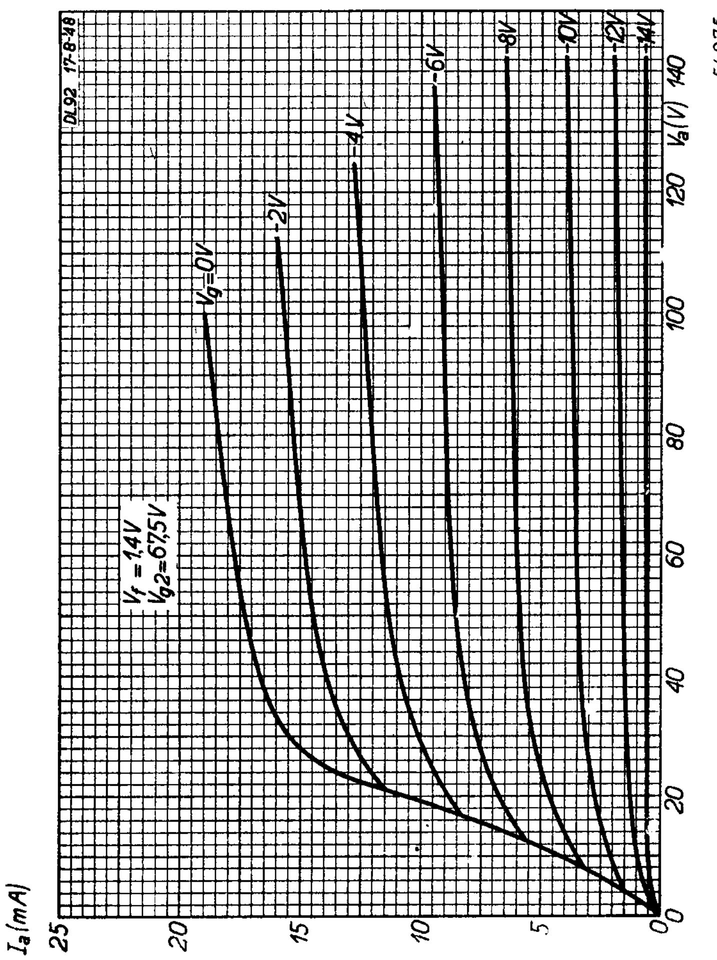
DL 92

"Miniwatt"

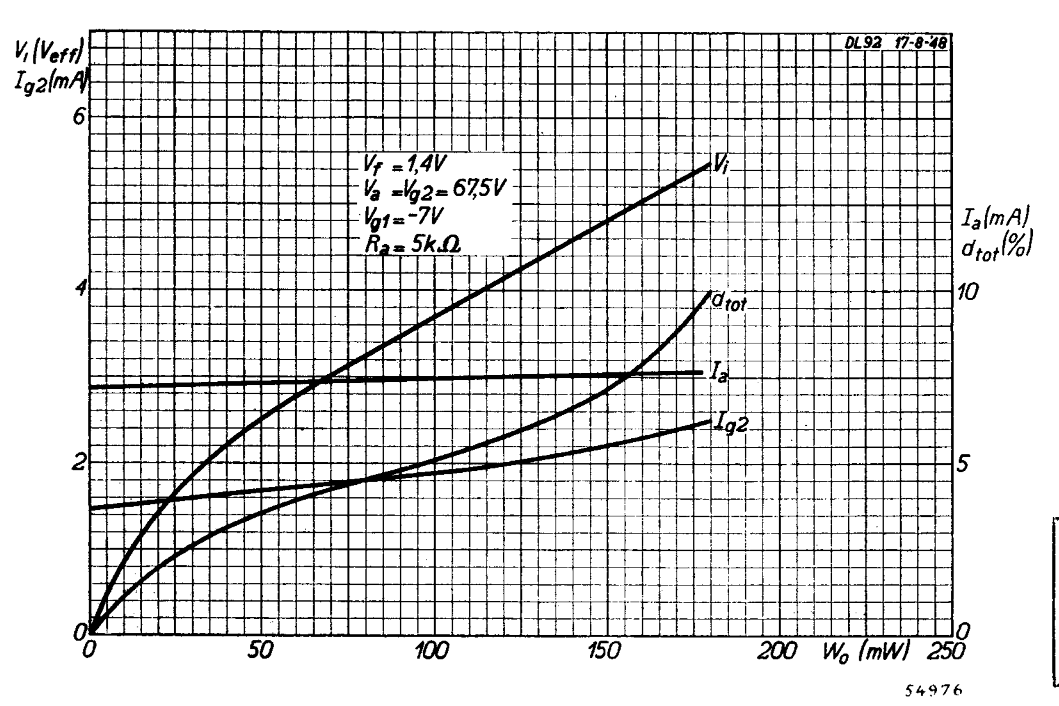



DL92 17-8-'48
V_f = 1,4V
V_a = V_{g2} = 67,5V
I (mA)
20
15
10
5
0
I_a
I_{g2}
-15
V_{g1} (V)
-10
-5
0
54974

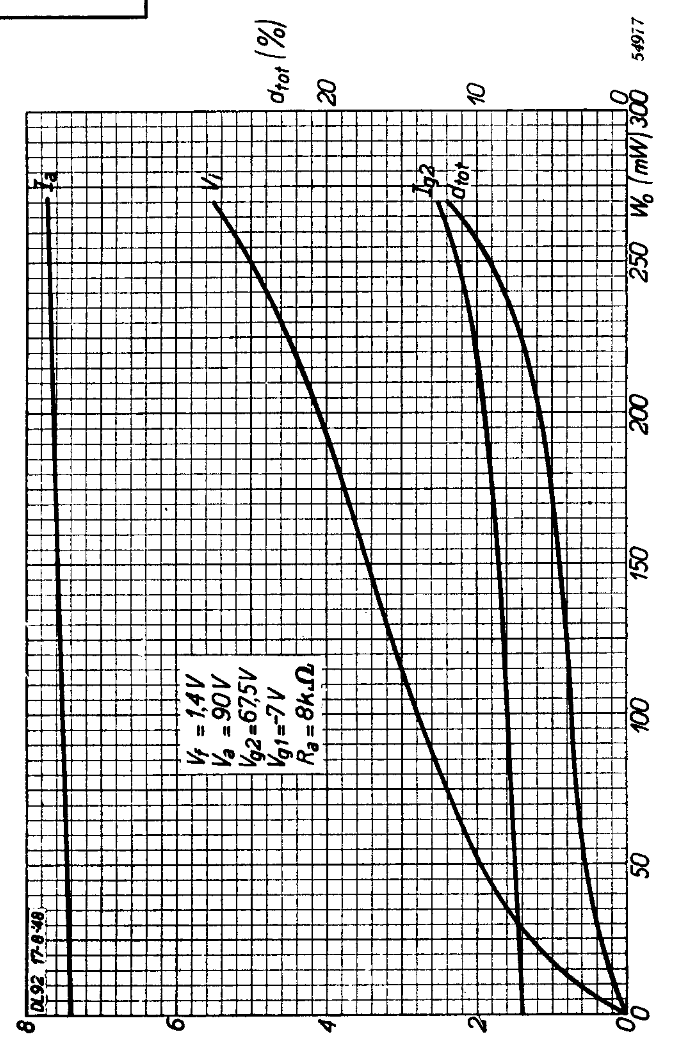
DL 92 "Miniwatt"



54975



DL92 17-8-48
V_i (V_{eff})
I_{g2} (mA)
6
4
2
0
V_f = 1,4V
V_a = V_{g2} = 67,5V
V_{g1} = −7V
R_a = 5kΩ
V_i
d_{tot}
I_a
I_{g2}
I_a (mA)
d_{tot} (%)
10
5
0
0
50
100
150
200
W_o (mW)
250
54976



d_{tot} (%)
54977
20
10
0
300
250
200
150
100
50
0
W_o (mW)
I_a
V_i
I_{g2}
d_{tot}
V_f = 1,4V
V_a = 90V
V_{g2} = 67,5V
V_{g1} = -7V
R_a = 8kΩ
DL92 17-8-48
8
6
4
2
0
V_i (V_{eff})
I (mA)



DL 92

I (mA)

DL92 17-8-48

$V_f = 2,8V$
$V_a = V_{g2} = 45V$

I_a

I_{g2}

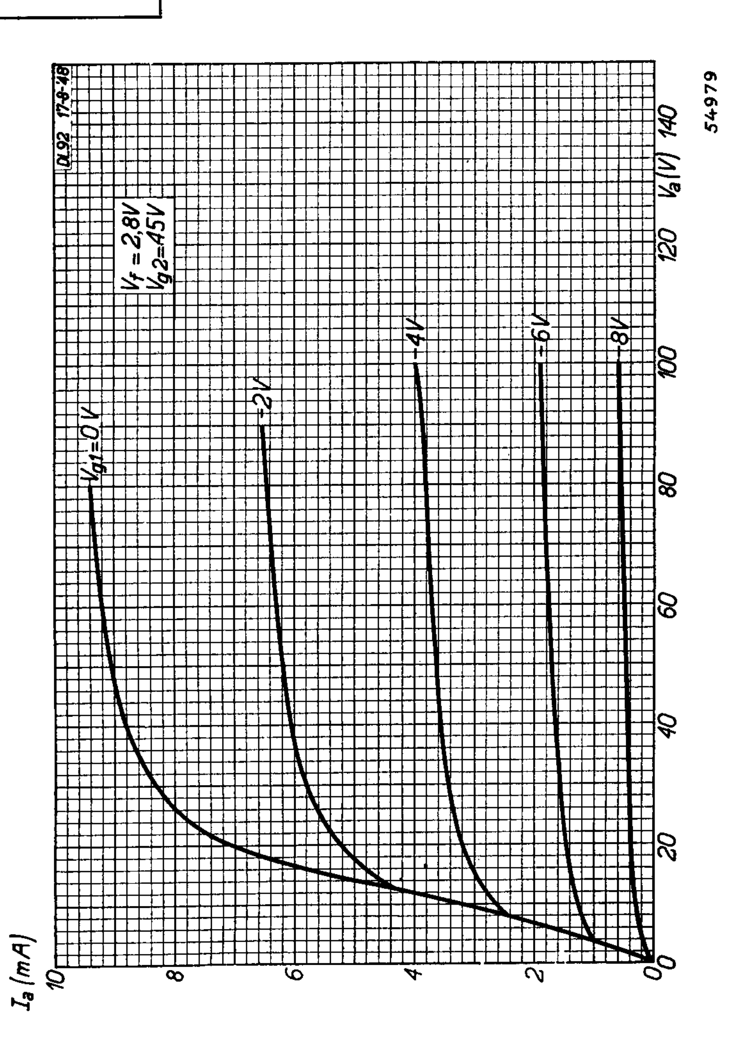
10 8 6 4 2 0

-15 V_{g1} (V) -10 -5 0

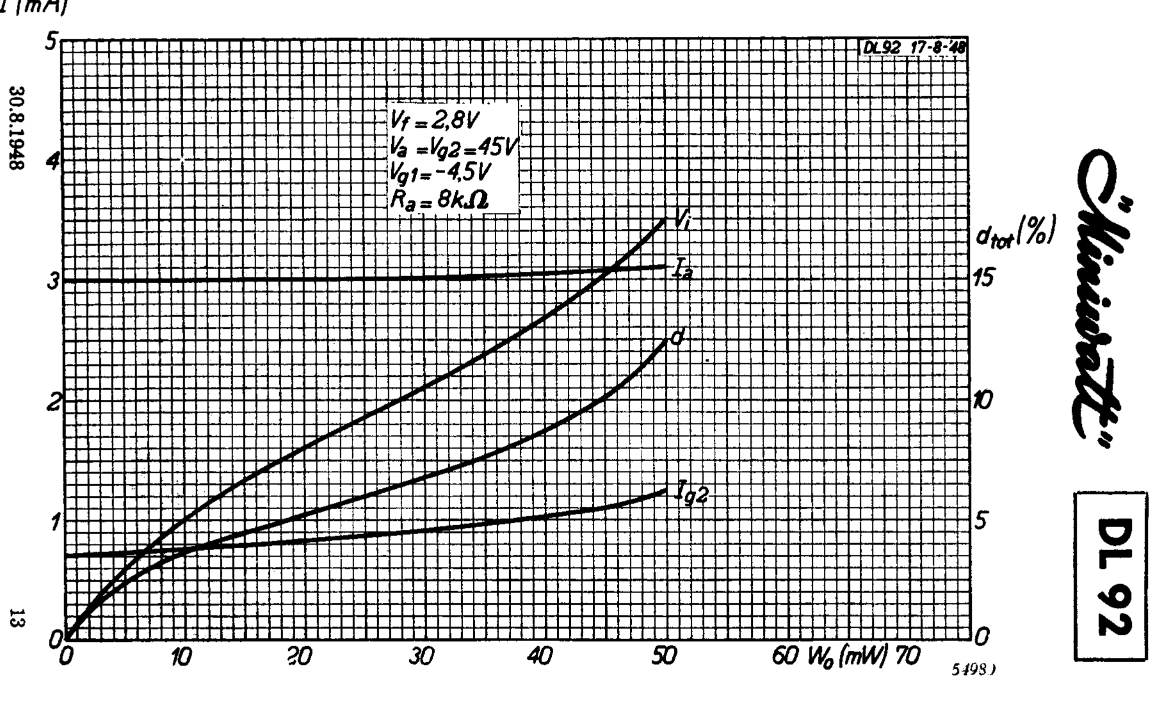
54978

DL 92

"Miniwatt"

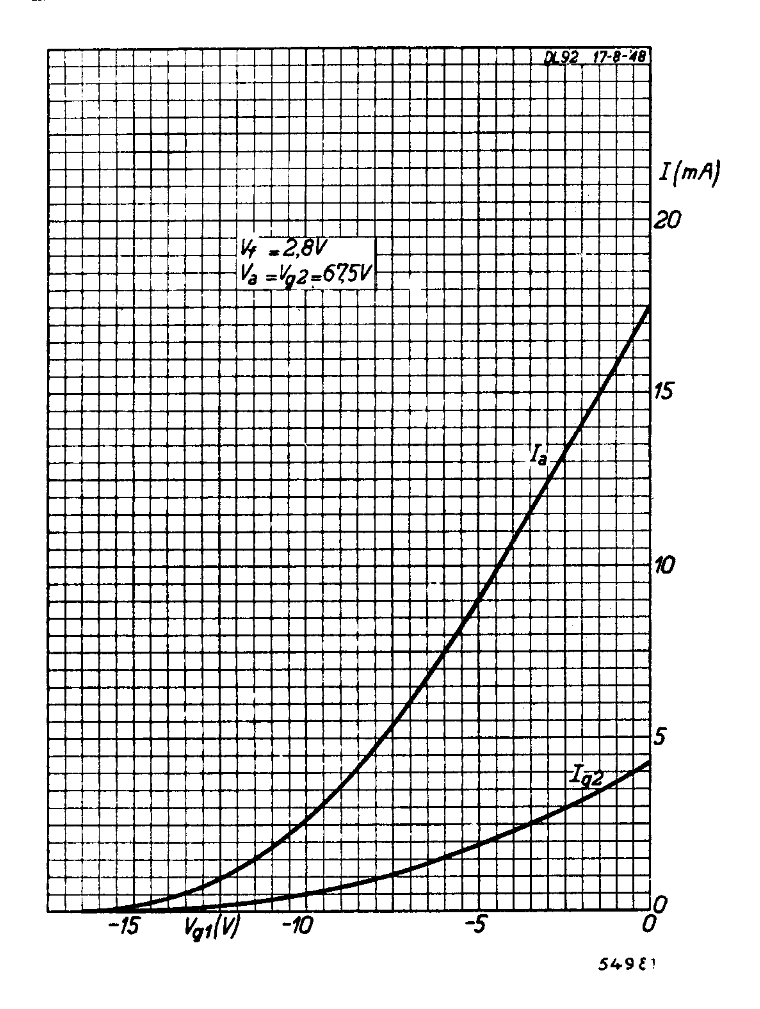


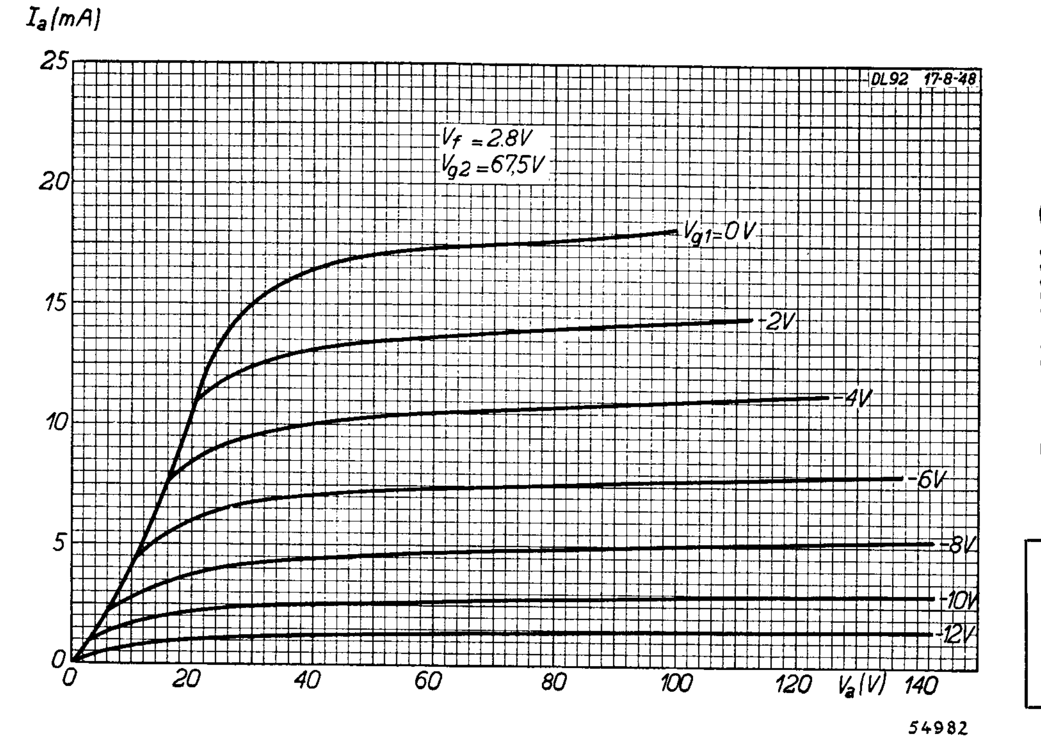
"Miniwatt" **DL 92**



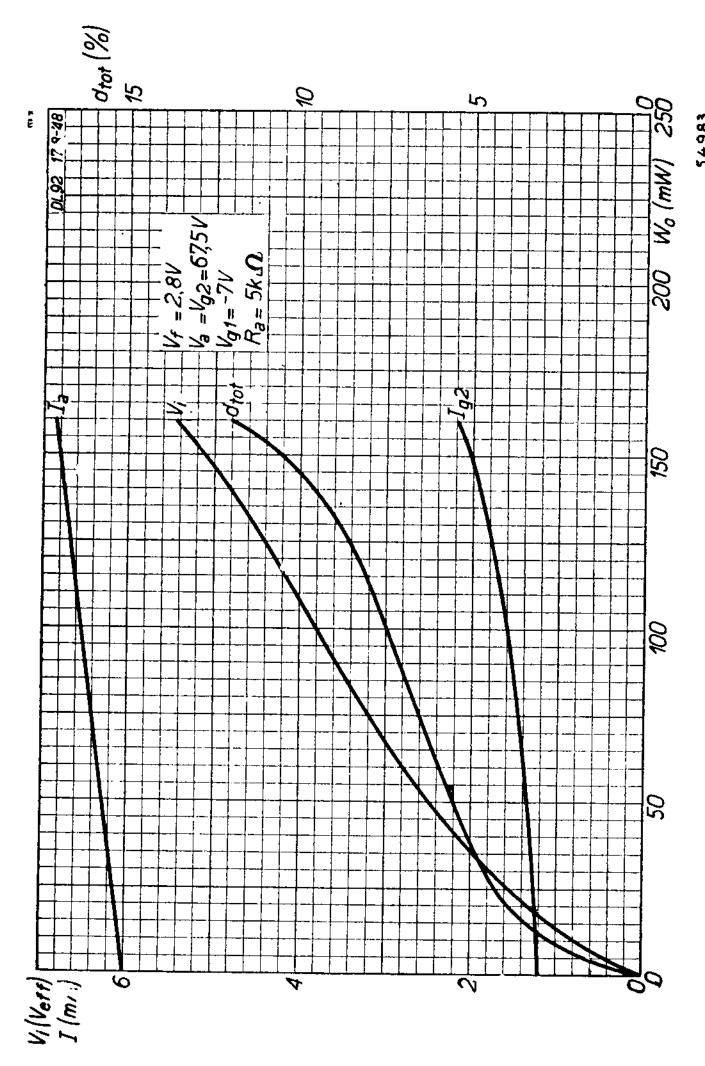
DL 92

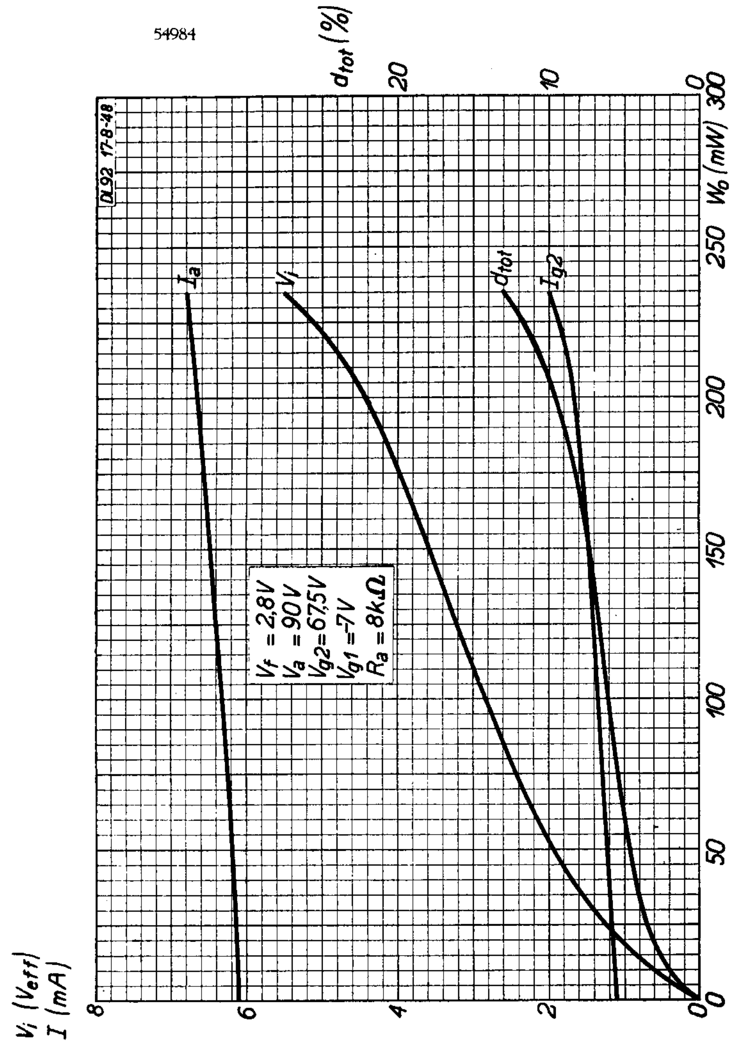
"Miniwatt"




I_a(mA)
25
20
15
10
5
0
DL92 17-8-48
V_f = 2.8V
V_{g2} = 67,5V
V_{g1}=0V
-2V
-4V
-6V
-8V
-10V
-12V
0
20
40
60
80
100
120
V_a(V)
140
54982

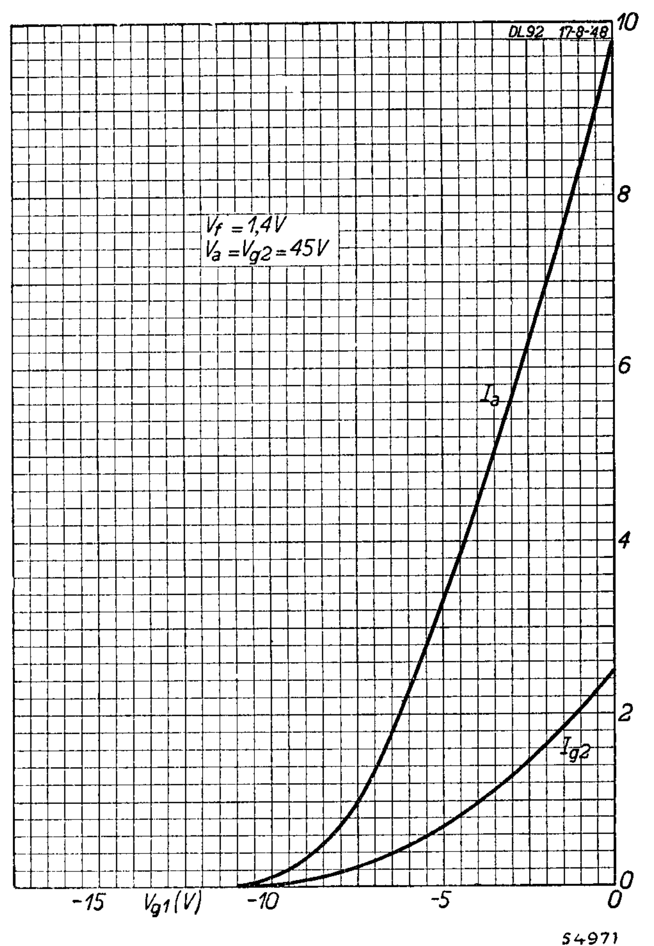
DL 92 "Miniwatt"



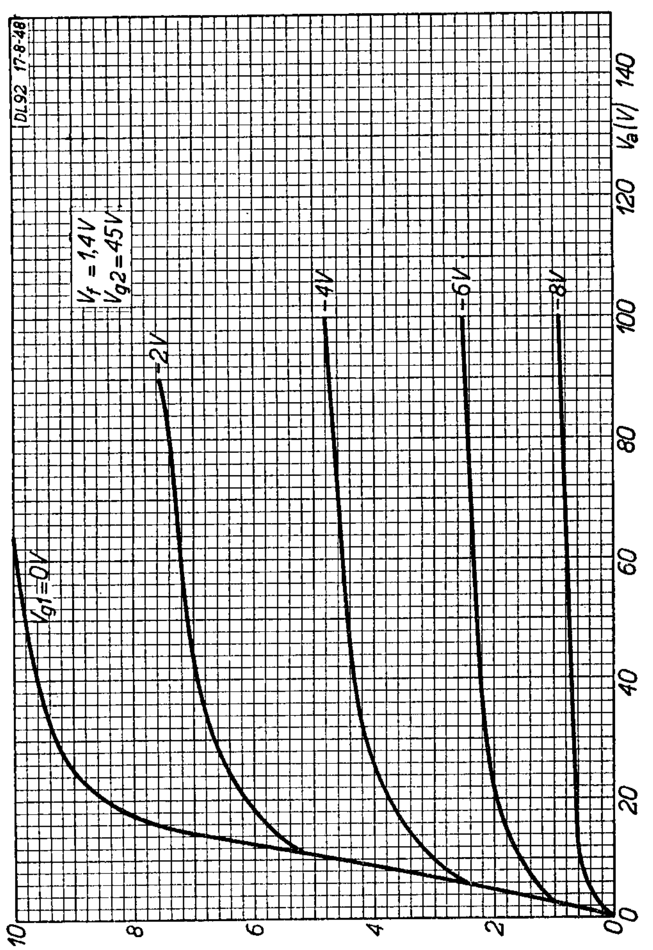

54984
DL92 17-8-48
d_{tot} (%)
20
10
0
300
250
200
150
100
50
0
W_o (mW)
I_a
V_i
d_{tot}
I_{g2}
V_f = 2,8V
V_a = 90V
V_{g2} = 67,5V
V_{g1} = -7V
R_a = 8kΩ
8
6
4
2
0
V_i (V_{eff})
I (mA)

30.8.1948

PHILIPS DL 92

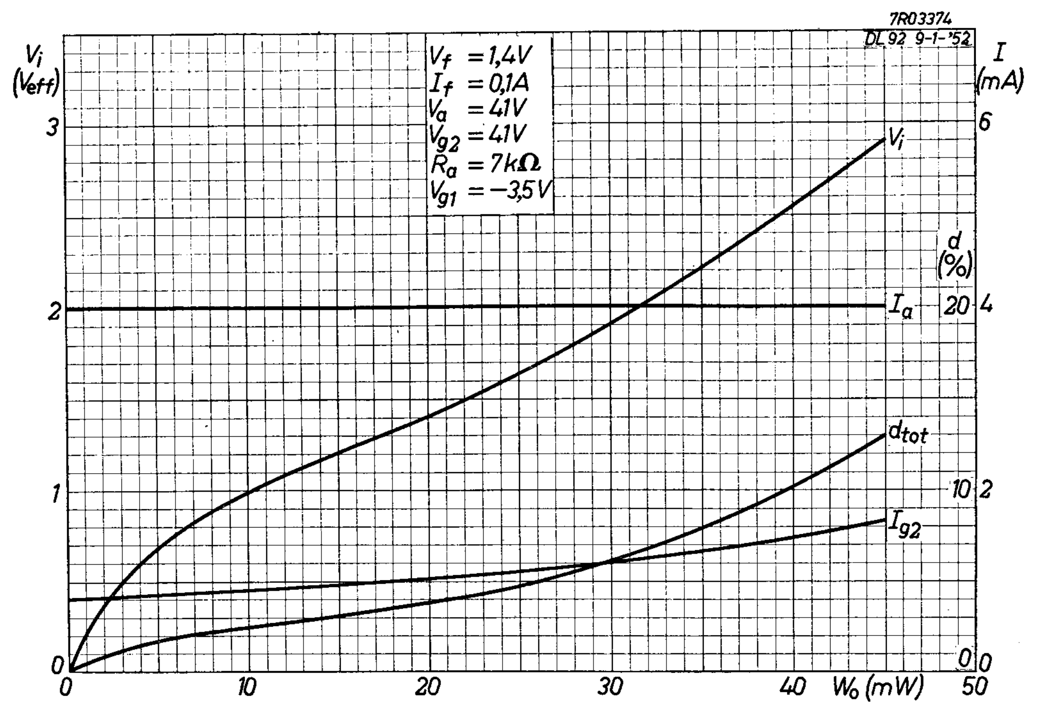


DL 92 PHILIPS



PHILIPS

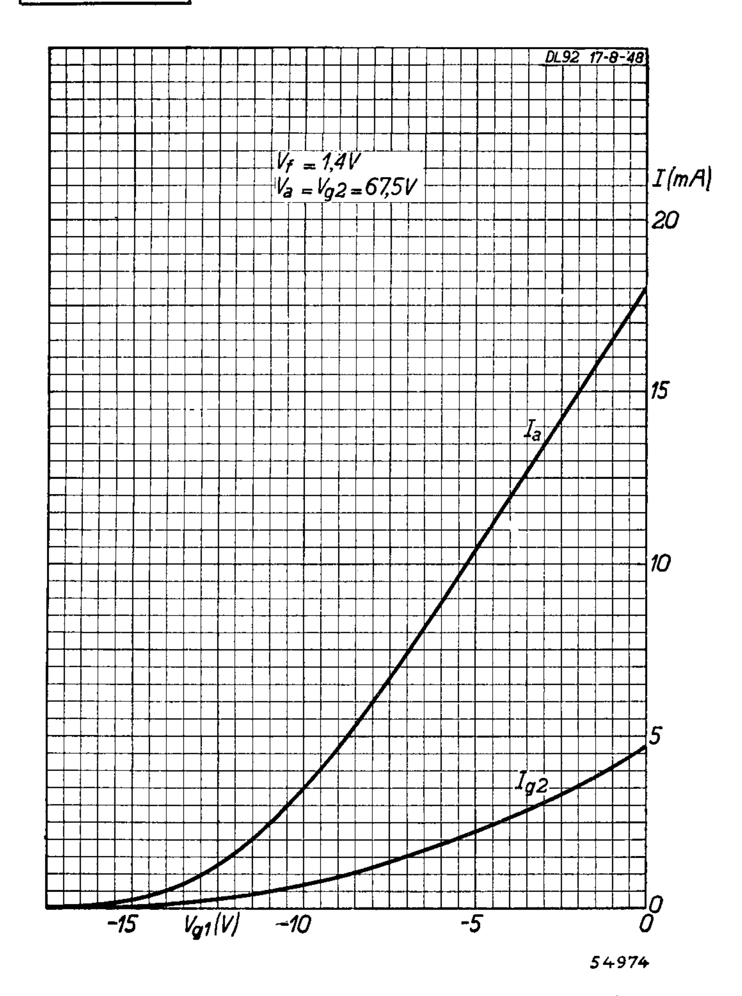
DL 92



4.4.1952

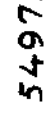
C

DL 92 PHILIPS



54974

D



DL 92

PHILIPS

7R03375
DL 92 9-1-'52

V_f = 1,4 V
I_f = 0,1 A
V_a = 61 V
V_{g2} = 61 V
R_a = 7 kΩ
V_{g1} = −6 V

V_i (V_{eff}): 0, 1, 2, 3, 4, 5
I (mA): 0, 2, 4, 6, 8, 10
d (%): 0, 10, 20
W_o (mW): 0, 20, 40, 60, 80, 100, 120, 140

Curves: V_i, I_a, I_{g2}, d_{tot}

7R03376
DL 92 9-1-'52

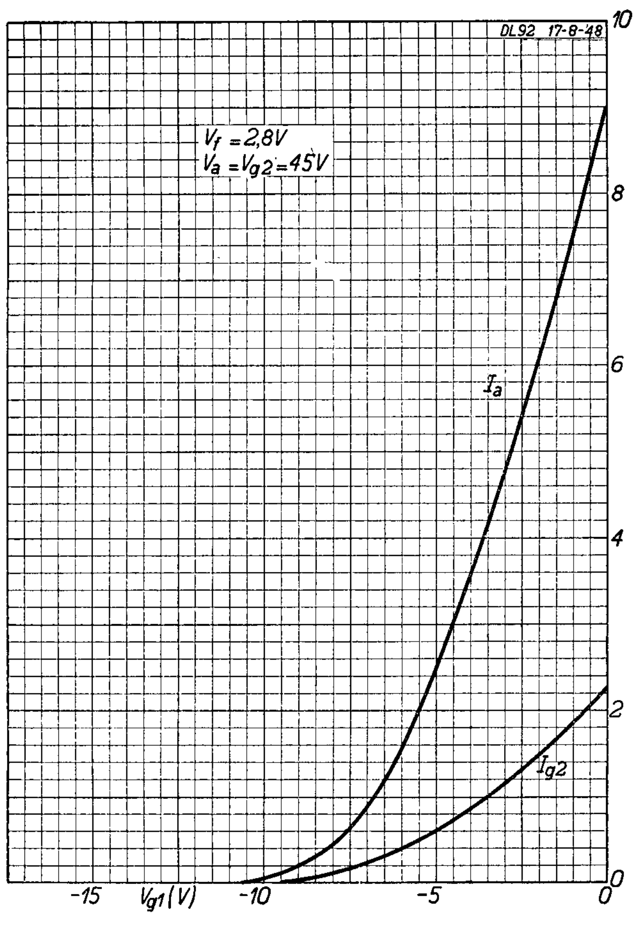
V_f = 1,4 V
I_f = 0,1 A
V_a = 84 V
V_{bg2} = 84 V
R_a = 7 kΩ
R_{g2} = 10 kΩ
V_{g1} = −6,5 V

V_i (V_{eff}): 0, 2, 4, 6
I (mA): 0, 5, 10, 15
d (%): 0, 10, 20
W_o (mW): 0, 50, 100, 150, 200, 250

Curves: V_i, I_a, d_{tot}, I_{g2}

PHILIPS

DL 92

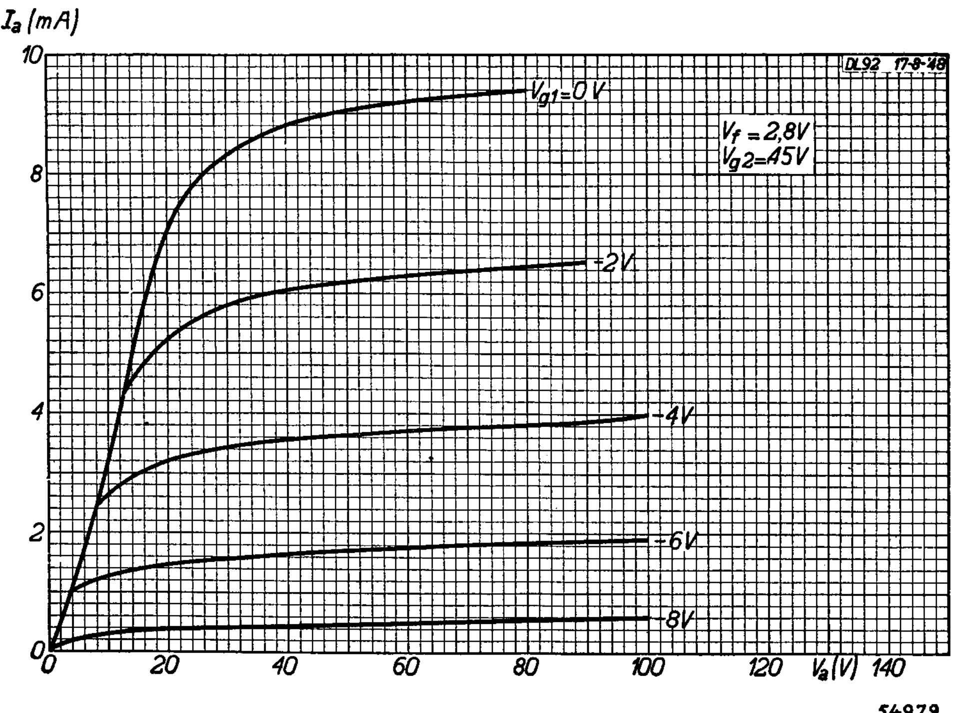


11.11.1953

G

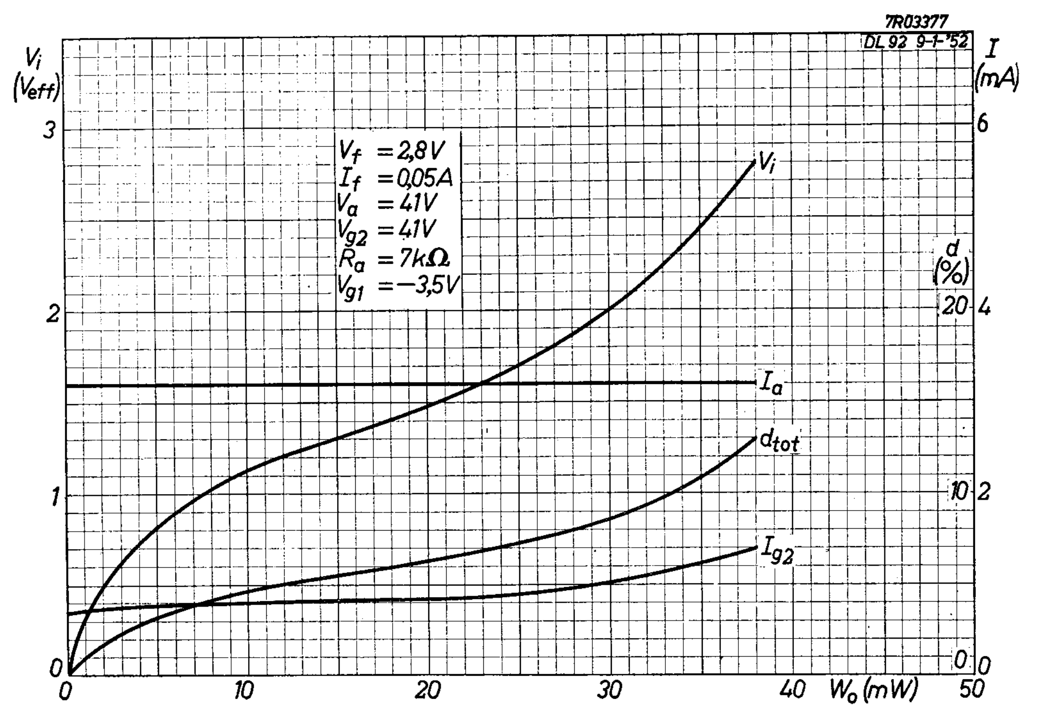
DL 92

PHILIPS



PHILIPS

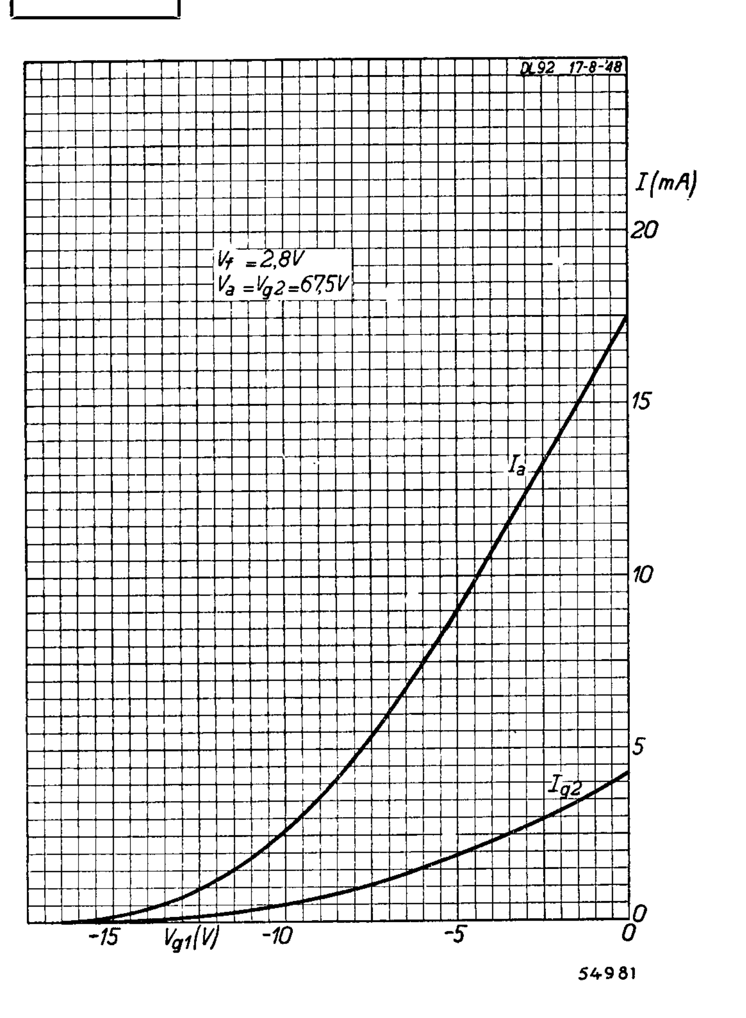
DL 92



4.4.1952

I

DL 92 PHILIPS

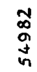


54981

J

PHILIPS

DL 92



11.11.1953

K

DL 92 PHILIPS

7R03378
DL 92 9-1-'52

V_f = 2,8V
I_f = 0,05A
V_a = 62V
V_{g2} = 62V
R_a = 7kΩ
V_{g1} = −5,5V

V_i (V_{eff})
I (mA)
d (%)
V_i
I_a
d_{tot}
I_{g2}
0 20 40 60 80 100 120 W_o (mW) 140

7R03379
DL 92 9-1-'52

V_f = 2,8V
I_f = 0,05A
V_a = 84V
V_{bg2} = 84V
R_{g2} = 10kΩ
R_a = 7kΩ
V_{g1} = −6V

V_i (V_{eff})
I (mA)
d (%)
V_i
I_a
d_{tot}
I_{g2}
0 50 100 150 200 W_o (mW) 250



DL92

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7	3	1954.06.06
8	4	1950.12.12
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10	4	1954.06.06
11	5	1948.08.30
12	6	1948.08.30
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20	14	1948.08.30
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25	B	1953.11.11
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33	J	1952.04.04
34	K	1953.11.11
35	L	1953.11.11
36, 37	FP	1999.08.23